Rhodora

JOURNAL OF THE
NEW ENGLAND BOTANICAL CLUB.

Conducted and published for the Club, by

BENJAMIN LINCOLN ROBINSON Editor-in-chief.

FRANK SHIPLEY COLLINS
MERRITT LYNDON FERNALD } Associate Editors.
HOLLIS WEBSTER

WILLIAM PENN RICH
EDWARD LOTHROP RAND } Publication Committee.

Vol. 7. October, 1905. No. 82.

CONTENTS:

Eclipta alba in Massachusetts. *S. N. F. Sanford* . . . 173
Recently Recognized Species of Crataegus. *C. S. Sargent* . 174
An anomalous alpine Willow. *M. L. Fernald* . . . 185
Sclerolepis in New Hampshire. *F. T. Lewis* 186
A Work for the Teachers of Biology 187

Boston, Mass.
740 Exchange Building.

Providence, R. I.
Preston and Rounds Co.

Printed by Edward W. Wheeler, Cambridge, Mass.

RHODORA.—A monthly journal of botany, devoted primarily to the flora of New England. Price $1.00 per year ($1.25 to all foreign countries except Canada); single copies 15 cents. Volume 1, $1.50. All remittances by check or draft, except on Boston or New York, must include ten cents additional for cost of collection. Notes and short scientific papers, relating directly or indirectly to the plants of the northeastern states, will be gladly received and published to the extent that the limited space of the journal permits. Forms will be closed five weeks in advance of publication. Authors (of more than one page of print) will receive 25 copies of the issue in which their contributions appear. Extracted reprints, if ordered in advance, will be furnished at cost.

Address manuscripts and proofs to
B. L. ROBINSON, Clement Circle, Cambridge, Mass.

Subscriptions, advertisements, and business communications to
W. P. RICH, 300 Massachusetts Avenue, Boston, Mass.

Single copies may be had from
E. L. RAND, Corresponding Sec'y N. E. Botanical Club,
740 Exchange Building, Boston, Mass.

Entered at Boston, Mass., Post office as Second Class Mail Matter

FIELD-BOOK OF WILD BIRDS AND THEIR MUSIC.

By F. SCHUYLER MATHEWS; an entirely new presentation of the woodland musician with valuable and scientific transcriptions of his songs. Profusely illustrated in color and black and white drawings. G. P. PUTNAM'S SONS, N. Y. $2.00 by mail, or Address F. S. MATHEWS, 17 Frost Street, Cambridge, Mass.

NOTICE

Mosses with a Hand-lens, Second Edition, will contain 200 pages instead of 150 as at first planned. To cover the additional cost the price will become $1.75 on all orders received after April 1st, 1905.

Parts I and II of Mosses with Hand-lens and Microscope now ready at $1.00 per part. As soon as part V is issued the price will be increased to $1.25.

A supplement including all the species of Gray's Manual range not included in the main work and keys to *all the species*, will be issued to supply the demand for a complete manual. Sample pages sent on application.

A. J. GROUT, 360 LENOX ROAD, BROOKLYN, N. Y.

HARDY NATIVE AMERICAN PLANTS

and Carolina Mountain Flowers. Many new rare and local varieties.

HARLAN P. KELSEY, Landscape Architect,
Tremont Building, Boston.

Prop. Highlands Nursery,
Kawana, North Carolina. Catalogues.

Consultation and plans for improvement of estates, private and public grounds, suburban properties and resorts.

GROUT

MOSSES WITH A HAND-LENS. Seventy-five pages, $1.10 net, post-paid.

MOSSES WITH A HAND-LENS AND MICROSCOPE. Part I. 86 pages. $1.00 net, post-paid. Sample pages on application.

O. T. LOUIS, 59 FIFTH AVENUE, NEW YORK CITY.

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 7 October, 1905 No. 82

ECLIPTA ALBA IN MASSACHUSETTS.

S. N. F. Sanford.

The appearance of any plant in a new locality is always interesting, whether the extension of its range has been gradual, or is the result of accident, the plant becoming established in the latter case by quick adaptation to its new surroundings.

The discovery of *Eclipta alba* Hassk. at Fall River, Massachusetts, Sept. 5, 1905, led to the usual inquiry regarding the present knowledge of the plant in the North, for the manuals give the range as Southern New York, New Jersey, and Southward to Florida. A specimen collected on the South Boston flats by C. E. Perkins, in 1879, is in the herbarium of the New England Botanical Club, and this appears to be the basis of the only other New England record. The South Boston station is now probably destroyed.

The Fall River specimens are not mere waifs struggling to exist, for the writer counted some fifty vigorous, nearly full-sized plants growing on both sides of a stream, some of them bearing five or more stout branches, each with one to several flowers. The limited area in which the plants were found, however, points to a very local origin, and the proximity to the terminus of a railroad over which is transported much cotton from the South, indicates at once their probable source.

Aside from the discovery of *Eclipta alba* so far out of its natural range, an interesting study of habitat is involved. The land is low, wet, waste ground through which runs a small stream of fresh water. Into this stream is a more or less constant flow of hot water from a neighboring cotton mill, resulting in a warm, moist atmosphere all

about the area. This combination has produced an ideal habitat for *Eclipta*, the conditions being not unlike those which prevail in its Southern home. Add to this the fact that the plant is a composite with the usual vitality of that group, and there is no reason why the plants should not continue to thrive and spread.

Fall River, Massachusetts.

RECENTLY RECOGNIZED SPECIES OF CRATAEGUS IN EASTERN CANADA AND NEW ENGLAND, — VI.

C. S. Sargent.

(*Continued from page 164.*)

Stamens 10 or less.
Mature leaves thin.
Anthers pink.

Crataegus rhombifolia, Sargent, Rhodora, v. 193. (1903.)

This species, described from specimens gathered by Dr. C. B. Graves near Norwich, Connecticut, appears to be widely distributed through western New England and to cross the Hudson River into eastern New York. Massachusetts, Great Barrington, *Brainerd* and *Sargent*; Vermont, Ferrisburg, *Brainerd*; Twin Mountain, Rutland, *Eggleston* (nos. 2229 and 2343), and Gardener's Island (nos. 2320 and 2343), Charlotte, *Horsford* in 1879: New York, *Peck*, North Greenbush (no. 69), Whitehall (no. 61), Crown Point, *Eggleston* (nos. 2236 and 2264), *Brainerd* and *Sargent* in 1900.

Crataegus Peckietta, n. sp. Leaves oblong-obovate to oval or broad-rhombic, short-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth and usually slightly and irregularly divided above the middle into small acute lobes, nearly fully grown when the flowers open during the first week of June and then thin, yellow-green, lustrous and scabrate above, with short white hairs and pale and glabrous below with the exception of a few short hairs along the base of the veins, and at maturity thin but firm in texture, glabrous, yellow-green, smooth and lustrous on the upper and pale on the lower surface, 5–6 cm. long and 3–4 cm. wide, with

thick yellow midribs and 5 or 6 pairs of slender primary veins extending obliquely to the points of the lobes; petioles stout, narrowly wing-margined to the middle, puberulous while young, deeply grooved on the upper side, 1–2 cm. long; leaves on vigorous shoots oblong-obovate, more coarsely serrate, slightly lobed, often 8–9 cm. long and 5–6 cm. wide, with stout petioles about 3 cm. in length. Flowers 1.2–1.4 cm. in diameter, on long slender glabrous pedicels, in loose lax 15–20-flowered compound corymbs; calyx-tube narrowly obconic, glabrous, the lobes wide, acuminate, glandular-serrate, villose on the outer and covered on the inner surface with matted pale hairs, reflexed after anthesis; stamens 9–11, usually 10; anthers pale pink; styles 1–3. Fruit ripening from the first to the middle of September and remaining on the branches until after the leaves have fallen, on long drooping pedicels, in many-fruited clusters, ovate, rounded at the apex, nearly truncate at the base, red or greenish red, 9–10 mm. long and wide; calyx little enlarged, with a deep narrow cavity, and closely appressed lobes red below the middle and villose on the upper side, and often deciduous from the ripe fruit; flesh thin, dry and yellow; nutlets 2 or 3, full and rounded at the base, gradually narrowed and rounded at the apex, rounded and ridged on the back, with a low broad ridge, penetrated on the inner faces by long narrow cavities, about 6 mm. long and 4 mm. wide.

A shrub 2–5 m. high, with numerous stems 5–7 cm. in diameter near the ground and covered with gray-brown bark, the lower branches horizontally spreading, the upper ascending, and slender slightly zigzag branchlets marked by occasional oblong pale lenticels, dark orange-green and glabrous when they first appear, becoming bright chestnut-brown and very lustrous in their first season and dull gray-brown the following year, and armed with slender slightly curved red-brown shining spines 6–8 cm. long.

Rocky ridges; central, eastern and southern Adirondack region, New York, *Charles H. Peck*, Piseco, (no. 63 type), June, August and September, 1904, also Lake Pleasant, Hamilton County, Keene, Essex County, June, 1905, and Horicon, Warren County.

Crataegus Bristolensis, n. sp. Leaves ovate to rhombic, acute or acuminate, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and divided into 4 or 5 pairs of small acuminate lateral lobes, nearly half grown when the flowers open about the middle of May and then membranaceous, light yellow-green and roughened above by short rigid white hairs and glaucous below, and at maturity thin but firm in texture, smooth, yellow-green and lustrous on the upper and paler on the lower surface, 7–8 cm. long, 5–6 cm. wide, with stout midribs and slender primary veins arching obliquely to the points of the lobes;

petioles slender, slightly wing-margined at the apex, grooved on the upper side, glabrous, often dark rose color late in the season, 3–4 cm. in length. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in wide lax usually 8–10-flowered corymbs, with linear glandular bracts and bractlets fading rose color and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes slender, entire or occasionally glandular-dentate near the middle, tinged with red toward the acuminate apex, glabrous on the outer and puberulous on the inner surface, reflexed after anthesis; stamens 10; anthers pale pink; styles 2 or 3. Fruit ripening the end of September, on slender red pedicels, in few-fruited drooping clusters, oval, bright scarlet, covered with a slight bloom, marked by small pale dots, 1.2–1.4 cm. long; calyx little enlarged, with a narrow deep cavity, and closely appressed lobes pubescent on the upper side, their tips often deciduous from the ripe fruit; flesh thin, greenish yellow; nutlets 2 or 3, full and rounded at the ends, or when 3 narrowed and acute at the apex, ridged on the back, with a broad low deeply grooved ridge, penetrated on the inner faces by broad shallow irregular cavities, about 6 mm. long and 4 mm. wide.

A broad shrub, with stout nearly straight branchlets marked by small oblong pale lenticels, dark orange-green and glabrous when they first appear, becoming bright chestnut-brown and lustrous during their first season, orange-brown and lustrous in their second year, and ultimately light gray tinged with red, and armed with numerous stout straight or slightly curved chestnut-brown shining spines 3–5 cm. long.

Somerset, Bristol County, Massachusetts, *J. G. Jack*, (no. 7 type), May and September 1903.

The relationship of this species is with *Crataegus fertilis*, Sarg., of the Penobscot Valley, Maine (see Rhodora, v. 182), but it differs from that species in its scabrate leaves, smaller at the flowering time, more slender petioles, glabrous pedicels and corymbs, narrow nearly entire and less hairy calyx-lobes, in its less lustrous fruit in fewer-fruited clusters, and in its shorter and more slender spines.

Crataegus baccata, n. sp. Leaves rhombic to oval or rarely obovate, short-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 4 or 5 pairs of small acuminate lobes, more than half grown when the flowers open during the first week of May and then membranaceous, light yellow-green, roughened by short white hairs and pubescent or villose along the midribs above and pale and glabrous with the exception of a few axillary hairs below, and at maturity thin but firm in texture, smooth, lustrous, and yellow-

green on the upper and pale on the lower surface, 5–6 cm. long and 3–5 cm. wide, with stout midribs tinged with rose late in the season on the lower side toward the base, and slender yellow primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, deeply grooved, sparingly villose while young, rose-colored in the autumn, 8–18 mm. in length. Flowers about 1.5 cm. in diameter, on slender villose pedicels, in wide lax many-flowered hairy corymbs, with linear-obovate to lanceolate glandular bracts and bractlets, fading brown and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, glandular, with bright red glands, glabrous on the outer and coated on the inner surface with shining white hairs, reflexed after anthesis; stamens 5–10; anthers pink; styles 2 or 3, usually 2. Fruit ripening early in September and soon falling, on slender pedicels, in few-fruited erect or spreading clusters, subglobose, orange-red, lustrous, marked by many small pale dots, 7–8 mm. in diameter; calyx little enlarged, with a narrow shallow cavity, and spreading lobes serrate above the middle, villose on the upper side and usually persistent on the ripe fruit; flesh thin, yellow, dry and mealy; nutlets generally 2, full and rounded at the ends, prominently ridged on the back, with a broad deeply grooved ridge, penetrated on their inner faces by deep narrow irregular cavities, about 6 mm. long and 5 mm. wide.

A shrub 2–3 m. high, with numerous erect spreading stems, and stout zigzag branchlets marked by occasional oblong pale lenticels, light orange-green and glabrous when they first appear, becoming light reddish brown and lustrous and ultimately dull gray-brown, and armed with many straight slender light red-brown shining spines 4–6 cm. in length.

Low rocky pastures, Worcester County, Massachusetts, South Lancaster, *E. F. Thayer*, September, 1903, May, 1904 (type); Fayville, *S. C. Sears*, May 1903.

Anthers pale yellow.

Crataegus Handyae, n. sp. Leaves broadly ovate to rhombic, acute or acuminate, rounded or concave-cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth, and divided above the middle into 4 or 5 pairs of broad acuminate lobes, more than half grown when the flowers open about the 20th of May and then membranaceous, yellow-green, very smooth and glabrous above, with the exception of a few hairs on the midribs, and glaucous and villose on the sides of the slender yellow midribs and veins below, with short white hairs persistent during the season, and at maturity thin but firm in texture, dark green, glabrous and lustrous on the upper and pale on the lower surface, 6–7 cm. long and 4–6 cm. wide; petioles slender, slightly wing margined at the apex, deeply grooved

on the upper side, glabrous, 3–4 cm. in length. Flowers 1.8–2 cm. in diameter, on slender elongated glabrous pedicels, in broad lax usually 6–10-flowered corymbs, with linear obovate to lanceolate minutely glandular bracts and bractlets, fading rose color and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, acuminate, glandular-serrate usually only near the middle, glabrous on the outer, puberulous on the inner surface, reflexed after anthesis; stamens 10; anthers creamy white; styles 2 or 3, surrounded at the base by a ring of long white hairs. Fruit ripening at the end of September, on long slender drooping pedicels, in few-fruited clusters, subglobose, bright scarlet, lustrous, marked by occasional large pale dots, 1–1.2 cm. in diameter; calyx little enlarged, with a deep narrow cavity, and spreading reflexed or incurved lobes villose-pubescent above and dark red toward the base on the upper side; flesh thin, light yellow, slightly acid; nutlets 2 or 3, narrowed and rounded at the ends or when 3 acute at the apex, prominently ridged on the back, with a broad high deeply grooved ridge, penetrated on the inner faces by broad shallow irregular cavities, 7–8 mm. long, 4–5 mm. wide.

A shrub, with stout zigzag branchlets marked by numerous small oblong pale lenticels, light orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first season and ultimately dark gray-brown, and armed with slender slightly curved purplish spines 4–6 cm. long.

Somerset, Bristol County, Massachusetts, *J. G. Jack* (no. 8 type), May and September, 1903.

This distinct and handsome species is named for Miss Louise Holmes Handy of Fall River who first called my attention to the presence of several species of Crataegus in Fall River and Somerset.

Crataegus Stratfordensis, n. sp. Leaves oval to obovate, acuminate, gradually narrowed and concave-cuneate or, on vigorous shoots, rounded at the entire base, finely doubly serrate above, with straight glandular teeth and slightly divided above the middle into 4 or 5 pairs of short acuminate lobes, more than half grown when the flowers open during the first week of June and then thin, pale yellow-green and puberulous on the midribs above and pale and sparingly villose below along the midribs and veins, with short white persistent hairs, and at maturity thin but firm in texture, yellow-green and glabrous on the upper and paler yellow-green on the lower surface, 6–9 cm. long and 4.5–5 cm. wide, with slender light yellow midribs and 6–8 pairs of thin primary veins; petioles slender, wing-margined to the middle, deeply grooved on the upper side, 1–2 cm. long. Flowers about 1.5 in diameter, on slender elongated sparingly villose pedicels, in broad lax many-flowered corymbs, with linear obovate to lanceolate rose-colored bracts and bractlets mostly deciduous before the flowers

open; calyx-tube narrowly obconic, glabrous, the lobes wide, laciniately glandular-serrate, with bright red glands, glabrous on the outer, puberulous on the inner surface; stamens 7–10; anthers pale yellow or greenish white; styles 2 or 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening at the end of September, on long slender pedicels, in many-fruited drooping clusters, oval, greenish yellow mottled with crimson, lustrous, 8–10 mm. long and 7–8 mm. wide; calyx prominent, with a short tube, a broad deep cavity, and reflexed coarsely serrate lobes, their tips mostly deciduous from the ripe fruit; flesh thin and dry; nutlets 2 or 3, full and rounded at the base and gradually narrowed and rounded at the apex, rounded and only slightly ridged on the back, penetrated on the inner faces by large deep cavities, about 7 mm. long and 5 mm. wide.

A broad shrub 3–4 m. high, with numerous stems and stout nearly straight branchlets, dark orange-yellow and glabrous when they first appear, light chestnut-brown and lustrous during their first winter and dull brown tinged with red the following year, and armed with many stout straight or slightly curved purplish ultimately shining spines 4–6 cm. long.

Dry banks of pond holes near the coast of Long Island Sound, Stratford, Fairfield County, Connecticut, *E. H. Eames* (no. 137 type), May, June and September, 1901.

Crataegus pellucidula, n. sp. Leaves oval to obovate-oblong, acute, gradually narrowed to the concave-cuneate entire base, finely doubly serrate above, with straight or incurved glandular teeth, and slightly divided into short acute lateral lobes, more than half grown when the flowers open about the 1st of June and then membranaceous, light yellow-green, slightly roughened by short white hairs and villose along the midribs above and pale and glabrous below with the exception of a few short hairs along the primary veins and in their axes, and at maturity thin but firm in texture, glabrous, yellow-green, smooth and lustrous on the upper and pale on the lower surface, 6–7 cm. long and 4–5 cm. wide, with stout yellow midribs often tinged with rose color toward the base, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, deeply grooved and puberulous while young on the upper side, soon glabrous, 1–1.5 cm. in length. Flowers on stout elongated villose pedicels, in lax many-flowered compound villose corymbs, with linear obovate glandular bracts and bractlets, fading brown and mostly deciduous before the flowers open; calyx-tube broadly obconic, covered at the base with matted pale hairs, nearly glabrous above, the lobes wide, foliaceous, acuminate, laciniately glandular-serrate; stamens 10; anthers cream color; styles 2 or 3. Fruit ripening the end of September, on drooping slender reddish pedicels, in flat many-fruited clusters, subglobose, scarlet, very lus-

trous, translucent, marked by occasional large pale dots, 1.2–1.4 cm. in diameter; calyx enlarged, with a broad deep cavity, and large coarsely serrate erect or incurved lobes usually persistent on the ripe fruit; flesh thick, succulent, orange color; nutlets 2 or 3 rounded at the ends, rounded and ridged on the back, with a broad low slightly grooved ridge, irregularly penetrated on the inner faces by large deep cavities, dark-colored, about 7 cm. long and 4 cm. wide.

A tree 3–4 m. high, with a trunk 8–10 cm. in diameter, and stout nearly straight branchlets marked by large pale oblong lenticels, light yellow-green when they first appear, bright red-brown and lustrous during their first winter, and dull gray faintly tinged with red the following year, and armed with stout straight or slightly curved purplish lustrous ultimately gray-brown spines 4–5 cm. long.

Rocky pastures, Litchfield, Litchfield County, Connnecticut, *C. H. Bissell* (no. 72 type), September 1903, May 1904.

Well distinguished by the very broad laciniate calyx-lobes enlarged and erect on the beautiful dark lustrous fruit.

Crataegus spatiosa, n. sp. Leaves ovate, acute or acuminate, rounded or abruptly concave at the broad entire often unsymmetrical base, sharply doubly serrate above, with straight glandular teeth, and divided into 5 or 6 pairs of short broad acuminate lateral lobes, more than half grown when the flowers open during the last week of May and then thin, dark green, shining and slightly roughened above by short whitish hairs and paler and sparingly villose below along the midribs and veins, with short hairs mostly persistent throughout the season, and at maturity thin but firm to subcoriaceous, smooth, dark green and lustrous on the upper and pale yellow-green or whitish on the lower surface, 6–8 cm. long, 5.5–7 cm. wide; petioles stout, narrowly wing-margined at the apex, glabrous, glandular, with small stipitate red persistent glands, 2.5–3 cm. in length; stipules linear, glandular-serrate, fading rose color, caducous; leaves on vigorous shoots broadly ovate, gradually narrowed and concave-cuneate at the base, more coarsely serrate, often deeply divided into broad acuminate lobes, 7–8 cm. long and 6–7 cm. wide. Flowers cup-shaped, 2–2.3 cm. in diameter, on short slender glabrous pedicels, in compact usually 5–9-flowered corymbs, with linear-lanceolate bracts and bractlets, fading brown and generally deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, obscurely glandular mostly near the middle, reflexed after anthesis; stamens 10; anthers pale cream-color; styles 3, or rarely 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening early in October, on slender erect pedicels, in few-fruited clusters, oval to globose or rarely depressed globose, concave at the base, scarlet, lustrous, often blotched with yellow, marked by occa-

sional minute pale dots, 1.2–1.3, or rarely 1.4 cm. in diameter, and when oval once and a half as long as broad; calyx prominent, with a narrow deep cavity and appressed lobes often deciduous from the ripe fruit; flesh thin, light orange color, insipid; nutlets usually 3, rounded at the base, gradually narrowed and rounded at the apex, ridged on the back, with a broad deeply grooved ridge, penetrated on the inner faces by large shallow cavities, about 7 mm. long and 4 mm. wide.

A slender tree sometimes 7 m. high, with a trunk occasionally 10 cm. in diameter, covered with rough gray bark, small spreading and recurved branches, and slender slightly zigzag branchlets marked by oblong pale lenticels, light yellow-green and glabrous when they first appear, light reddish or orange-brown and lustrous during their first season and gray-brown the following year, and armed with slender nearly straight chestnut-brown shining ultimately ashy gray spines 4–6 cm. long; or often a tall shrub with numerous ascending stems.

Oak woods; shore of Fishers Island Sound, Mumford's Point, Groton, New London County, Connecticut, *C. B. Graves* (no. 60 a type), May, September and October 1903.

Crataegus Emersoniana, n. sp. Leaves broadly ovate to oval, short-pointed and acuminate at the apex, rounded or cuneate at the entire base, sharply doubly serrate above, with straight or incurved glandular teeth, and divided above the middle into 3 or 4 pairs of short acuminate spreading lobes, nearly half-grown when the flowers open about the 20th of May and then thin, light yellow-green, smooth and glabrous above with the exception of a few soft hairs near the base of the midribs and pale and sparingly villose below along the primary veins and in their axils, with short persistent hairs, and at maturity thin but firm, dark yellow and lustrous on the upper and paler on the lower surface, 5–6 cm. long and broad, with slender petioles wing-margined at the apex, slightly grooved, sparingly villose along the upper side while young, soon glabrous, occasionally glandular, with minute dark deciduous glands, rose-colored in the autumn, 2–2.5 cm. in length; leaves on vigorous shoots usually rounded at the base, more deeply lobed, 8–10 cm. long and broad, with stout broadly winged petioles glandular through the season. Flowers about 2 cm. in diameter, on long slender glabrous pedicels, in 7–15-flowered compound corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate and red at the apex, slightly dentate above the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 10; anthers pale yellow; styles 3–5, surrounded at the base by a narrow ring of scattered white hairs. Fruit ripening at the end of September, on slen-

der drooping red pedicels, in few-fruited clusters, subglobose to globose, scarlet, lustrous, marked by numerous small pale dots, 1.2–1.4 cm. in diameter; calyx little enlarged, with a broad shallow cavity, and reflexed and closely appressed slightly serrate lobes dark red below the middle and puberulous on the upper side, their tips often deciduous from the ripe fruit; flesh thick, dry and mealy; nutlets 3 or 4, rounded at the base, gradually narrowed and rounded at the apex, ridged on the back, with a broad high deeply grooved ridge, penetrated on the inner faces by long and narrow shallow cavities, about 7 mm. long and 4–5 mm. wide.

A shrub 1–2 m. high, with stout zigzag branchlets marked by numerous oblong pale lenticels, orange-yellow and glabrous when they first appear, becoming light chestnut-brown and lustrous in their first winter and dull gray-brown the following year, and armed with numerous slender slightly curved purplish shining spines 5–6 cm. long.

Somerset, Bristol County, Massachusetts, *J. G. Jack* (no. 4 type), May and September 1904.

This species, and *C. spatiosa*, resemble the Coccineae in the character of the leaves and in the general appearance of the fruit, but the cavities on the ventral surfaces of the nutlets, although less developed than in most species of Tomentosae, indicate that they should be referred to that group. It is named in memory of George Barrel Emerson (1797–1881), the author of the classical *Report on the Trees and Shrubs of Massachusetts*, whose love of trees and their cultivation led to the establishment of the Arnold Arboretum.

Mature leaves subcoriaceous to coriaceous.

Anthers rose-color.

Crataegus fulgens, n. sp. Leaves broadly ovate to suborbicular, rounded or acute at the apex, abruptly narrowed and concave-cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth and slightly divided above the middle into 4 or 5 pairs of small acute lobes, scabrate above while young, with short white hairs, and pale and glabrous below with the exception of occasional axillary persistent hairs, and at maturity coriaceous, dark yellow-green, smooth and lustrous on the upper and pale on the lower surface, 5–7 cm. long and 4–7 cm. wide, with midribs deeply impressed on the upper side of the leaves and rose-colored on the lower toward the base, and prominent yellow primary veins extending obliquely to the points of the lobes; petioles stout, wing-margined at the apex, deeply grooved, dark rose color late in the season, 2–2.5

cm. in length. Flowers opening the first of June, on slender elongated glabrous or sparingly villose pedicels, in usually 10–12-flowered glabrous corymbs, with linear glandular bracts and bractlets fading brown; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, laciniately glandular-serrate, glabrous on the outer, puperulous on the inner surface; stamens 5–10; anthers rose color; styles 2 or 3. Fruit ripening the middle of September, on slender red pedicels, in generally 8–10-fruited drooping clusters, subglobose but rather broader than long, crimson, lustrous, marked by numerous small pale dots, 1–1.2 cm. in diameter; calyx little enlarged, with a wide shallow cavity, and spreading closely appressed laciniate lobes villose-pubescent on the upper side and often deciduous from the ripe fruit; flesh thin, orange color, soft and succulent; nutlets 2 or 3, full and rounded at the ends, rounded and usually only slightly ridged on the back, penetrated on the inner faces by short broad cavities, about 7 cm. long and 5 cm. wide.

A broad shrub 3–4 m. high, with stout spreading stems and thick nearly straight branchlets marked by numerous small pale lenticels, light orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first winter and ultimately dark dull gray-brown, and armed with stout nearly straight purplish spines 4–6 cm. in length.

Banks of small ravines, near the coast; Stratford, Fairfield County, Connecticut, *E. H. Eames* (no. 5 type) May 1898, September 1903.

Anthers pale yellow.

Crataegus Searsi, n. sp. Leaves obovate to ovate, acute or acuminate gradually narrowed and cuneate at the entire base, sharply often doubly serrate above, with straight glandular teeth, and divided above the middle into 4 or 5 pairs of short acuminate spreading lobes, deeply tinged with red and coated above with long soft white hairs when they unfold, and nearly half grown when the flowers open during the last week of May and then membranaceous, dark yellow-green, lustrous and roughened above by short rigid white hairs and pale and glabrous below, with the exception of a few hairs on the midribs and in the axils of the primary veins, and at maturity subcoriaceous, yellow-green, smooth and lustrous on the upper and pale yellow-green, and nearly glabrous on the lower surface, 5–6 cm. long and 4–5 cm. wide, with slender midribs often tinged with rose on the lower side toward the base and thin primary veins extending very obliquely to the points of the lobes; petioles slender, wing-margined at the apex, villose on the upper side while young, becoming glabrous 1–1.5 cm. in length; stipules linear, glandular-serrate, bright red, caducous; leaves on vigorous shoots broadly ovate to rhombic, sometimes

rounded at the gradually narrowed base, more coarsely serrate and more deeply lobed, and often 5–6 cm. long and 6–7 cm. wide, with stout rose-colored petioles broadly wing-margined below the middle and 1.2–1.5 cm. in length. Flowers about 1.5 cm. in diameter, on slender elongated villose pedicels, in wide lax many-flowered hairy corymbs, with linear acuminate glandular bracts and bractlets fading brown; calyx-tube narrowly obconic, hairy at the base, glabrous above, the lobes slender, acuminate, entire or slightly and irregularly glandular-serrate, glabrous on the outer, puberulous or villose on the inner surface, reflexed after anthesis; stamens 7–10; anthers pale yellow; styles 2 or 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening early in September and soon falling, on reddish villose pedicels, in many-fruited drooping clusters, subglobose or often a little longer than wide, crimson, lustrous, marked by occasional large pale dots, 8–10 mm. in diameter; calyx little enlarged, with a narrow shallow cavity and closely appressed lobes villose above and mostly persistent on the ripe fruit; flesh thin, yellow, sweet and succulent; nutlets 2 or 3, full and rounded at the ends, rounded and irregularly ridged on the back, with a low often grooved ridge, penetrated on the inner faces by small narrow cavities, about 6 mm. long and 4 mm. wide.

A shrub 2–3 m. high, with numerous thick ascending stems forming an open irregular head, and very stout slightly zigzag branchlets marked by few large oblong pale lenticels, light orange-green and villose-pubescent when they first appear, becoming nearly glabrous, bright chestnut-red and very lustrous before winter, and dull reddish brown the following season, and armed with numerous stout crimson bright chestnut-brown shining ultimately dull gray spines 4.5–6 cm. long.

Rocky hillsides; Wolf Pen Farm, Southborough, Worcester County, Massachusetts, *C. S. Sargent*, May and September 1904.

This species is named for the late J. Montgomery Sears, by whom it was first shown to me on his farm at Southborough where also grew within an area of a few acres *Crataegus conjuncta*, Sarg., *C. acutiloba*, Sarg., here unusually remote from the coast, *C. fucosa*, Sarg., *C. Thayeri*, Sarg., *C. flabellata*, Spach, the only reported Massachusetts' station for this northern species, *C. intricata*, Lang., and *C. Helenae*, Sarg.

Crataegus ferentaria, Sargent, *Proc. Rochester Acad. Sci.* iv. 135. (1903.)

This species, first noticed in the neighborhood of Rochester, New York, now appears to be one of the most widely distributed New England species.

Maine, Gerrish Island and York Harbor, *Jack*: New Hampshire, Holderness, *C. E. Faxon*: Vermont, New Haven, *Eggleston* (no. 3331) and Middlebury (nos. 3332 and 3334), Waybridge, *Brainerd* (no. 21), and New Haven (no. 23), Twin Mountain, Rutland, *Eggleston* (nos. 2230 and 2332), Lyndonville, *Eggleston* (no. 3398): Massachusetts, West Boylston, North Lancaster and Shirley, *E. F. Thayer*; Wareham, *Outram Bangs* (nos. 2, 3 and 4); Somerset *Jack*, (no. 1); Fall River, *L. H. Handy*; North Adams, *Sargent*: Rhode Island, Tiverton, *Sargent*: Connecticut, Franklin, *Graves* (no. 40): Ontario, near Toronto, *D. W. Beadle* (nos. 104, 105, 106).

In some of the Vermont specimens now referred to this species the anthers in the bud are faintly tinged with pink but are of the normal color soon after the flowers open.

Arnold Arboretum.

AN ANOMALOUS ALPINE WILLOW.

M. L. Fernald.

Gaspé Peninsula in Quebec is, in eastern America at least, the home of the genus *Salix*. There in an area of about 9000 square miles we know twenty-four indigenous species, and two varieties of such pronounced character as to seem perhaps worthy specific rank. Of these twenty-six indigenous willows fourteen are arctic-alpine shrubs of the Shickshock Mountains. Most of these shrubs, *Salix herbacea* L., *S. arctica* Pallas, *S. anglorum* Cham., *S. glauca* L., *S. desertorum* Richards., etc., are clearly referable to well known polar types; but one small ascending shrub occurring on alpine meadows of Mt. Albert and in crevices of serpentine along the headwaters of Ruisseau au Diable seems to be unique among arctic-alpine willows.

Superficially the shrub would be passed as the typical subglabrous *Salix desertorum* which grows along neighboring tributaries of Ruisseau au Diable, but that very beautiful shrub has densely white-pubescent capsules and yellowish chartaceous scales. The little shrub, which in habit, bark and foliage so closely simulates *S. desertorum*, has, instead, strictly glabrous capsules and glabrous green

herbaceous scales. In this scale-character the shrub somewhat approaches *S. retusa* of alpine Europe and its allies of the Himalayas; but unlike them it has the very definite style characteristic of *S. desertorum*, *S. glauca*, and their allies, all species with strongly pubescent capsules. If, as is apparently the case, this little willow is closely related to the superficially similar *S. desertorum* and its allies which abound on Mt. Albert, it would seem that the current tendency, to separate subgenerically species with glabrous from those with pubescent capsules, is at best artificial. Upon that question further study is needed, but since the Mt. Albert shrub with green herbaceous scales is clearly distinct from the described species to which it is apparently related it may be called

Salix **chlorolepis**. Frutex ramosus 0.3–1 m. altus, ramis suberectis griseis 6–8 mm. crassis junioribus badiis lucidis; foliis lanceolatis vel elliptico-oblongis vel anguste obovatis apice et basi subaequaliter attenuatis obtusis vel rotundatis supra viridibus subtus glaucis utrinque primo arachnoideis demum glabratis integris 1–2.5 cm. longis 4–14 mm. latis breviter petiolatis; amentis breviter foliato-pedunculatis ovoideis vel cylindricis 5–13 mm. longis; squamis oblongis vel obovatis subtruncatis vel retusis glabris viridibus subherbaceis 2–3 mm. longis; filamentis pallidis glabris 5 mm. longis, antheris 0.7 mm. longis; capsulis glabris conico-subulatis obtusis obsolete pedicellatis 4 mm. longis; stylis 1.5 mm longis valde fissis, stigmatibus bifidis laciniis elongatis divergentibus. — Quebec, alpine meadows and wet crevices of serpentine, altitude 800–1000 meters, headquarters of Ruisseau au Diable, Mt. Albert, August 12, 1905 (*Collins & Fernald*, no. 59).

Gray Herbarium.

Sclerolepis in New Hampshire. — According to both Gray's and Britton's manuals, *Sclerolepis verticillata*, Cass., ranges from New Jersey southward. Therefore the occurrence of this species in Bradford, N. H., a town some thirty-five miles north of Massachusetts and sixty miles from the coast, is of certain interest. At the southern end of Bradford Pond there is a grove of tall pitch pines separated from the water by a white sandy beach. During the first week of August, this beach was largely occupied by the following plants, all

abundant and in flower,— *Rhexia Virginica*, L.; *Drosera intermedia*, Hayne; *Xyris Caroliniana*, Walt.; *Utricularia cornuta*, Michx.; and *Eriocaulon septangulare*, Withering. *Pogonia ophioglossoides*, Nutt., in fruit was also abundant and showed two late albino blossoms. Along the water's edge, but not immersed, numerous plants of *Sclerolepis verticillata* were found, with flowers almost mature. A comparison of the specimens collected in Bradford with those from southern localities reveals no important differences. The species as it occurs in its more southern habitat is somewhat variable in height, in width of leaf, and in the firmness of the stem, differences depending in part upon whether the individual plants are growing in, or near the water. The Bradford specimens correspond to the shorter form, growing on the sand, and having a firm stem and numerous short leaves. Specimens collected at Bradford have been deposited in the Gray Herbarium of Harvard University. — Frederic T. Lewis, M. D., Cambridge, Massachusetts.

A Work for Teachers of Biology. — In "The Teaching of Biology"[1] Professor Lloyd and Dr. Bigelow have treated their theme with considerable fulness, great painstaking, and much advantage to teachers of biology. The aims and scope of the book may be seen from the following partial list of chapter subjects: the value of biology in education; nature study; the value of botany in secondary education; various types of botanical courses; principles to be emphasized; detailed discussion of the course; laboratory and materials; botanical literature; the value of zoology; animal nature study and human physiology in the elementary school; the subject matter and the outline of a course for the secondary school; the relation of zoology in secondary school and in college. The full bibliographies and references to pedagogical literature are especially valuable. As regards the class of teachers to whom the work will prove to be of most service, it may be said that the general suggestions and the specific directions to teachers in secondary schools are of most value. The ideals of the authors

[1] The Teaching of Biology in the Secondary School, by Francis E. Lloyd, A. M., and Maurice A. Bigelow, Ph. D., Professors in Teachers' College, Columbia University. New York. Longmans, Green, and Co., pp. 500. Price $1.50.

in respect to the equipment of teachers and the plane upon which instruction should be placed are high. In botany a "synthetic course" is advocated, wherein insistence is laid upon the correlation of morphology and physiology (with ecology), and a dynamic point of view is taken and carried out. As outlined in detail, with many practical helps, by Professor Lloyd, this course agrees well with the recommendations of the committee appointed by the Society for Plant Morphology and Physiology to formulate a uniform college entrance requirement in botany. Schoolmen may well read Dr. Bigelow's arguments in favor of a year's course in biology the botanical and zoological elements of which would be so adjusted that the important general principles of life might be taught to the exclusion of a mass of relatively uninstructive details. — R. G. L.

Vol. 7, no. 81, including pages 157 to 172, was issued 19 September, 1905.

BOTANICAL PUBLICATIONS

SYNOPTICAL FLORA OF NORTH AMERICA, by A. GRAY and others. Vol. I. Fascicles 1 and 2. A critical treatment of forty-five families of polypetalæ (*Ranunculaceæ to Polygalaceæ*) 1895-1897. $5.20.—GRAY HERBARIUM of Harvard University, Cambridge, Mass.

FLORA OF MT. DESERT ISLAND, MAINE, by EDWARD L. RAND and JOHN H. REDFIELD. With a Geological Introduction by WILLIAM MORRIS DAVIS. 1894. And a new map of the Island. 1901. Price $2.00, post free. **A few copies only remain for sale.**—Address EDWARD L. RAND, 53 State Street, Boston, Mass.

NEW ENGLAND WILD FLOWERS AND THEIR SEASONS, by WILLIAM WHITMAN BAILLY. Price 75 cents net.—PRESTON & ROUNDS CO., Providence, R. I.

THE FLOWER-LOVER'S MAGAZINE

If you want to know about our wildflowers send for **THE AMERICAN BOTANIST** which is edited especially for the flower-lover. It is not a technical journal but abounds in quaint, curious and otherwise interesting items about the wildflowers. Especially valuable in nature-study work. Send for a sample copy to

WILLARD N. CLUTE & CO., Publishers,
Binghamton, N. Y.

GENERAL ADVERTISEMENTS.

HOME GROWN LILIES.

Fresh from Beds. Wild Flowers, Hardy plants of all kinds.
Send for catalogue.

F. H. HORSFORD, Charlotte, Vt.

CONCORD NURSERIES, Concord, Massachusetts. Established on Minot Pratt's Homestead by his son, F. G. PRATT. Over 300 species grown, including *Rhodora*, pink and white, Andromedas, Cornels, Viburnums, Kalmias, Ivy, Myrica, Benzoin, Hamamelis. E. Mass. plants collected. Catalogue.

CAMBRIDGE BOTANICAL SUPPLY COMPANY,
WAVERLEY, MASS.

SUPPLIES for the Botanist in FIELD, HERBARIUM or LABORATORY. **SAMPLES** of Driers, Mounting Papers, Genus Covers and NEW LIST of PLANT MATERIAL for 1906 mailed on request. PHYSIOLOGICAL APPARATUS and HERBARIUM ESSENTIALS.

Prompt Attention. Standard Material. Immediate Shipments.

A Model Botanical Text-Book

LEAVITT'S OUTLINES OF BOTANY, . . . $1.00
With Gray's Field, Forest and Garden Flora, . . 1.80
With Gray's Manual of Botany, ... 2.25

For the High School Laboratory and Class Room.

By ROBERT GREENLEAF LEAVITT, A. M., of the Ames Botanical Laboratory. Prepared at the request of the Botanical Department of Harvard University.

THE practical exercises and experiments have been so chosen that they may be performed by schools with even simple apparatus. The instructions for laboratory study are placed in divisions by themselves, preceding the related chapters of descriptive text. The book combines the best features of the newest methods with that lucidity and definiteness which have given Dr. Gray's text-books their extraordinary success. It pays special attention to ecology, but morphology and physiology are also fully treated. The illustrations number 384, and have been drawn with great care and accuracy. The appendix contains valuable suggestions for the teacher, and the index is very complete.

American Book Company

New York **Cincinnati** **Chicago** **Boston**

Journal of The Maine Ornithological Society.

A quarterly journal of Maine Ornithology, "Bird Protection, Bird Study, the spread of the knowledge thus gained, these are our objects." Vol. VII will be larger and better than previous vols. 50 cts. a year, 15 cts. per copy. Sample copy free.

J. MERTON SWAIN,
Editor and Publisher,
Fairfield, Maine.

THE PLANT WORLD,

An Illustrated Monthly Magazine of Popular Botany.

$1.00 a year. Established 1897 12 numbers,

Official Organ of the Wild Flower Preservation Society of America. If you are interested in Botany the PLANT WORLD will interest you. If you are a teacher of Botany, the PLANT WORLD will help you by keeping you in touch with modern botanical thought.

Edited by Francis E. Lloyd

Teachers College, Columbia University,
Send two cent stamp for sample copy. New York City.